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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/707,372	12/09/2003	Chinu P. Bhavsar	81093973	1371

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EXAMINER	
VANAMAN, FRANK BENNETT	
ART UNIT	**PAPER NUMBER**
3618	

DATE MAILED: 12/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/707,372	BHAVSAR ET AL.
	Examiner	Art Unit
	Frank Vanaman	3618

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 September 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *8-12* is/are allowed.

6)☒ Claim(s) *1-7 and 13-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *9/3/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Status of Application

1. Applicant's comments, filed Sept. 3, 2004, have been entered in the application. Claims 1-16 remain pending, no claims have been added, canceled or amended.

Claim Rejections - 35 USC § 103

2. The portions of 35 USC §103 relied upon herein may be found cited in a previous office action

3. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaguchi (US 5,806,617) in view of Kawakatsu (US 4,335,429). Yamaguchi teaches a vehicle having a drive line (6), a battery (4) which stores electrical power, a sensor (14) which provides state of charge information and provides for the generation of a signal (steps 102, 108, etc), an electric motor (3) connected to the drive line and electrically to the battery, a variable displacement engine (2, see col. 13, line 66 through col. 14, line 5), wherein a number of active cylinders is increased based on a higher commanded engine torque output and decreased based on a lower commanded engine torque output, a controller (9, 10, 11, 12) which receives information from the battery sensor, an accelerator pedal (13) which transmits a signal proportional to a degree of depression (a), wherein the controller derives an engine torque signal (from 11) and a motor torque signal (from 12), wherein a desired torque is divided between engine and motor torque quantities (figures 5-6, col. 6, line 43 through col. 7, line 10), and further wherein the electric motor (bottom graph, figure 4) provides torque to the drive line in direct response to a transient torque demand (top graph figure 4- the transient demand being set by the change from a1-a2), the engine torque (EG TORQUE) not changing in direct response to the torque demand; wherein the vehicle may be operated such that a requested driving torque is set such that 100% of the torque may be delivered by the motor (i.e., a maximum value) or that 100% of the torque may be delivered by the engine (again, a maximum value-- see col. 15, lines 60-65). As regards the employment of all engine cylinders above a given threshold, while the reference to Yamaguchi fails to specifically teach torque thresholds for selecting numbers of engine cylinders to be activated, the reference does teach that the number of cylinders operating is adjusted

based on the load required (col. 14, lines 2-5), and in view of this teaching, it would have been obvious to one of ordinary skill in the art at the time of the invention to apportion the relationship of required torque to number of cylinders as based on specific thresholds so as to insure a consistent relationship between engine output and required torque.

The reference to Yamaguchi fails to specifically teach the comparison of the demanded torque to first and second thresholds, and deriving all torque from the motor when the demanded torque is below a first threshold, deriving some torque from the engine when the demanded torque is above a first threshold, and operating all cylinders when the demanded torque is above a second threshold. Kawakatsu teaches a motor/engine torque apportionment scheme wherein only motor drive is used when a torque value is below a first torque-speed threshold, and wherein the drive is divided up amongst an engine and motor when that threshold is exceeded. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide a threshold based switching between motor-only to motor and engine modes as taught by Kawakatsu's threshold-based system, for the purpose of insuring a positive switching point between one mode and another.

As regards the derivation of all torque from the engine when the battery state of charge is below a given value, it is not considered to be beyond the skill of the ordinary practitioner to prohibit electric drive and rely solely on engine drive when the state of charge is below a predetermined value, in order to allow the batteries to be charged and the vehicle driven, for the purpose of insuring that the battery state of charge is not reduced to zero, rendering the vehicle inoperative.

4. Claims 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaguchi in view of Chhaya et al. (US 6,484,833, filed 3/2000). The reference to Yamaguchi is discussed above and fails to teach the use of battery state of charge to control the application of the engine and or motors for driving the vehicle. Chhaya et al teach a system for apportioning driving force from a vehicle wherein a state of charge is monitored, and compared to a plurality of values (see figure 3) which are based on

different torque distributions (see 54, 58, 62, 66) and wherein if a state of charge is below a given value, then engine-only drive is employed(see figures 4, 5), and wherein when the state of charge is above the value, engine and motor drive is accomplished. It would have been obvious to one of ordinary skill in the art at the time of the invention to employ the mode switching system of Chhaya, based on a battery state of charge, with the hybrid drive of Yamaguchi having a variable capacity engine, for the purpose of insuring that the battery state of charge is not depleted, which would render the vehicle inoperative.

Allowable Subject Matter

5. Claims 8-12 are allowed.

Response to Comments

6. Applicant's comments, filed August 19, 2004, have been carefully considered. The examiner notes that while applicant has argued that certain limitations are not shown in the combined references, but has not argued that the references cannot be combined.

Applicant has argued that the combined references to Kawakatsu and Yamaguchi fail to teach two thresholds. The examiner disagrees. Note Yamaguchi at col. 13, line 66 through col. 14, line 5 (cited previously by the examiner) wherein a partial number of cylinders are stopped 'when the load is low' - which requires that the load be below a given threshold - without such a comparison the reference would not be capable of producing such a decision, and that all cylinders are operated when the load is higher (again, such a decision requiring a comparison with a threshold). Thus, Yamaguchi provides a sufficient teaching to at least render obvious the use of a threshold to control a number of cylinders between partial operation and a mode wherein all cylinders are operated (citation above). In view of the modifying reference to Kawakatsu teaching the apportionment of torque between engine and motor based on a threshold, the combined references teach the two thresholds to the breadth that such limitations are currently claimed. As regards the engine/motor torque threshold being a

function of vehicle speed, applicant's attention is again directed to the reference of Kawakatsu, at figure 2, which shows precisely that limitation. As regards the references not teaching the allocation of a majority of the torque values to the motor in response to a transient (i.e., rapid torque change), applicant's attention is directed to Yamaguchi at figure 4, which, again, shows precisely that limitation—a transient torque request by the accelerator and an immediate change in motor state, while an engine torque output remains constant until a later time. In Yamaguchi, also please note figures 5, 6, and 7, which clearly support the notion that accelerator pedal input may be viewed as a driver for an engine and/or motor torque. As regards the reference to Chhaya, note that Chhaya teaches comparing the battery state of charge to a plurality of values, namely the values set forth in decision elements 52, 56, 60, and 64, wherein these plural predetermined values are all based upon different torque demand schemes (identified in the elements 54, 58, 62, 66, and 68) to the breadth explicitly recited in the claims. It appears as though applicant is arguing limitations which are not recited in the claims.

Limitations not in the claims

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See In re Van Geuns, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

As regards reading unclaimed limitations from the specification into the claims

From MPEP 2111:

During patent examination, the pending claims must be given their broadest reasonable interpretation consistent with the specification. In re Hyatt, 211 F.3d 1367, 1372, 54 USPQ2d 1664, 1667 (Fed. Cir. 2000). Applicant always has the opportunity to amend the claims during prosecution, and broad interpretation by the examiner reduces the possibility that the claim, once issued, will be interpreted more broadly than is justified. In re Prater, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-51 (CCPA 1969) The court explained that "reading a claim in light of the specification, to thereby interpret limitations explicitly recited in the claim, is a quite different thing from 'reading limitations

of the specification into a claim,' to thereby narrow the scope of the claim by implicitly adding disclosed limitations which have no express basis in the claim." The court found that applicant was advocating the latter, i.e., the impermissible importation of subject matter from the specification into the claim.). See also In re Morris, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997)

Applicant has again referred to the transient response (in addressing the combination of Yamaguchi and Chhaya), and the examiner again reminds applicant that Yamaguchi teaches such a response, as has been noted above.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to F. Vanaman whose telephone number is 703-308-0424. Any inquiry of a general nature or relating to the status of this application should be directed to the group receptionist whose telephone number is 703-308-1113.

As of May 1, 2003, any response to this action should be mailed to:
Mail Stop _____
Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450,
Or faxed to one of the following fax servers:
Regular Communications/Amendments: 703-872-9326
After Final Amendments: 703-872-9327
Customer Service Communications: 703-872-9325

(cont'd., over)

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

F. VANAMAN
Primary Examiner
Art Unit 3618

11/29/04